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10/531,129	07/26/2005	Alexander Gutsol	DXPZ-0034 / 07-0772D	4959
23377 7590 10/12/2010 WOODCOCK WASHBURN LLP CIRA CENTRE, 12TH FLOOR 2929 ARCH STREET PHILADELPHIA, PA 19104-2891			EXAMINER NGUYEN, NGOC YEN M	
			ART UNIT 1734	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

eofficemonitor@woodcock.com

DETAILED ACTION

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-11, 13-15 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Applicants are request to point out support by page and line numbers in the instant specification for the following limitations: "partially oxidizing insoluble organic compounds", "partial-oxidation products" as now required in the instant claim 1; also, since claim 1 is now required "insoluble volatile organic compounds", there is clear support in the instant specification for "about 60 to about 6000 ppm VOC" of insoluble volatile organic compounds as now required in instant claim 4; "controlling the rate of flow of water droplets... of exhaust gas flow" as required in the instant claims 1, 6, and 10.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

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invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 6-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over S. Masuda et al., "Novel Plasma Chemical Technologies-PPCP and SPCP for Control of Gaseous Pollutants and Air Toxics", Journal of Electrostatics, Vol. 34, No. 4, May 1995, pp. 415-438, optionally in view of Schiffner (5,861,123) and Makin et al (4,181,675).

Masuda et al disclose a pulse corona induced plasma chemical process (PPCP) for control of gaseous pollutants (NO_x , SO_x , VOCs) and air toxics as well as odors (note abstract). PPCP uses nanosecond pulse coronas in a corona reactor in combination with a nanosecond high-voltage pulse power supply with pulse frequency of 50-250 Hz (0.05-.25 kHz) (note page 416, third full paragraph from bottom).

The great advantages of PPCP are it is very simple in construction and their overall cost, both initial and running, is one of the lowest among many other processes.

For PPCP, there are several aspects to be carefully considered, one of which is the removal of the reaction products from the gas phase to avoid the reverse reaction. This can be a water film formed on the reactor wall to absorb the reaction products (note item (4)(d) on page 419).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a water film on the reactor wall for the process of Masuda et al to promote the removal the reaction products. For the actual ratio of the

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water flow to the gas flow, it would have been obvious to one skill in the art to optimize such ratio to obtain the highest destruction and removal efficiency.

Optionally, Schiffner '123 can be applied to teach the need to remove trace amounts of methanol from pulp mill bleach plant emissions (note column 10, lines 34-37). The "trace amount" fairly suggests that the amount of methanol in the emissions is low, i.e. in ppm range, as required in the instant claims 4, 8, 11.

Optionally, Makin '675 can be applied to teach that methanol vapor, i.e. methanol in a gaseous stream, can be removed by scrubbing with water (note column 2, lines 31-34).

It would have been obvious to use the process of Masuda et al to remove methanol, which is a VOC, as suggested by Schiffner '123 the in presence of a water film because such water film would facilitate the removal of methanol as suggested by Makin '675.

Claims 1-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sobacchi et al, "Experimental assessment of non-thermal plasma techniques for removal of paper industry VOC emissions", 15th International Symposium on Plasma Chemistry, Orleans, July 9-13, 2001. Symposium Proceedings, Vol. VII: poster contributions, pp. 3135-3140) (taken from <http://plasma.mem.drexel.edu/publications/>), optionally further in view of Makin '675.

It should be noted that the Sobacchi is available as a reference under 35 USC, 102(b) for all claims because there is no support for the following limitations in the provisional application 60/367231, therefore, the earliest effective filing date for all claims is the filing date of the PCT/US03/09089, i.e. March 24, 2003. The following limitations are examples of limitations that do not have support in the provisional application:

- “partially oxidizing insoluble organic compounds”;
- “controlling the rate of flow of the water droplets...so that the ratio of the flow of spray of water droplets or water film to the exhaust gas flow...” in claims 1, 6, 10
- “*about* 0.2 to about 0.2 milliliters/minute” (no support for the “*about*” limitation) in claims 1 and 6;
- “0.1 to about 1 kHz” in claim 3;
- “about 60 to about 6000 ppm VOC” in claim 4;
- “ about 40°C to about 65°C” in claim 7;
- “about 4200 ppm VOC” in claim 8;
- “300 to about 3000 ppm VOC” in claim 11;
- “oriented strandboard production” in claim 13.

Sobacchi discloses a process using non-thermal plasma techniques for treating of volatile organic compounds (VOCs) emissions from the paper industry (note abstract). The gas compositions are listed in Table 1. The amounts of VOCs listed in Table 1 overlaps the claimed ranges. With respect to the encompassing and overlapping ranges previously discussed, the subject matter as a whole would have

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been obvious to one of ordinary skill in the art at the time of invention to select the portion of the prior art's range which is within the range of the applicants' claims because it has been held prima facie case of obviousness to select a value in a known range by optimization for the results. *In re Boesch*, 205 USPQ 215. Additionally, the subject matter as a whole would have been obvious to one of ordinary skill in the art at the time invention was made to have selected the overlapping portion of the range disclosed by the reference because overlapping ranges have been held to be a prima facie case of obviousness. *In re Malagari*, 182 USPQ 549.

In the experiments, pulse frequency was varied between 266 Hz and 1450 Hz (0.266 to 1.45 kHz). A water flow rate equal to 0.25 ml/min was provided and the gas flow rate was 2 SLM (note third page of the article, first full paragraph).

In Sobacchi, when the VOCs include insoluble volatile organic compounds such as dimethyl sulfide and pinene, such compounds would inherently be partially oxidized when subjected to the similar pulsed corona discharges.

The temperature can be from 70-200°C (note page 4 of the article, last paragraph). The target objective of 99% removal can be reached (note page 3 of the article, second full paragraph).

Sobacchi discloses that corona discharge allows for achieving high values of Destruction and Removal Efficiency (DRE), with much lower power consumption (note last page of the article, first full paragraph).

The ratio of the water spray to the exhaust gas flow is $0.25/2 = 0.125$ ml/min. This value is very close to the claimed value of "about 0.2 ml/min", therefore, no

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patentable difference is seen. Furthermore, the value of "0.125" would have suggested to one of ordinary skill in the art a slightly higher value based upon a reasonable expectation of success, *In re O'Farrell*, 853 F.2d 894, 904, 7 USPQ2d 1673, 1681 (Fed. Cir. 1988).

It would have been obvious to one of ordinary skill in the art to optimize the process conditions in Sobacchi, such as water flow rate, temperature, pulse frequency, etc. to obtain the highest removal rate at lowest power consumption.

Optionally, Makin '675 can be applied as stated above to teach that the presence of water spray would further facilitate the removal of methanol by scrubbing action.

Applicant's arguments filed July 7, 2010 have been fully considered but they are not persuasive.

Applicants argue that support for the term "partially" can be found in the Background of the Invention in the portion discussion removal efficiency.

Without specific mention to any page and line numbers, support for the claimed "partially oxidizing insoluble organic compounds" cannot be verified. Furthermore, removal efficiency appears to have to effect on whether or not the insoluble organic compounds can be partially oxidized.

Applicants argue that Masuda teaches the water is within the reactor and not the exhaust gas stream.

It should be noted that the claimed process is carried out "in the presence of the spray of water droplets or water film", no requirement that the water is within the exhaust gas stream.

Applicants argue that Sobacchi is no longer available as a reference due to the amendments to claims 1, 6 and 10.

The rejection is maintained because not all the limitations as required in the instant claims 1, 6, 10 have support in the provisional application, note rejection above. It should be noted that each claim (independent or dependent) would have its own earliest effective filing date, even if claims 1, 6 and 10 were entitled to the filing date of the provisional application, some dependent claims might not, in that case, Sobacchi reference can still be applied against any claim, including dependent claims, that does not entitle to the filing date of the provisional application.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

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extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ngoc-Yen M. Nguyen whose telephone number is (571) 272-1356. The examiner can normally be reached on Part time schedule.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman can be reached on (571) 272-1358. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Ngoc-Yen M. Nguyen/
Primary Examiner, Art Unit 1793

nmn
October 2, 2010